

**We Claim:**

1           1.       An energy recovery system of the type wherein heat is extracted from  
2       an engine by refrigerant passing through an heat exchanger of an organic rankine  
3       cycle system, comprising:  
4           a heat exchanger for transferring heat from said engine to an organic rankine  
5       cycle fluid flowing through said heat exchanger;  
6           a turbine for receiving said heated fluid from said heat exchanger and for  
7       transferring a thermal energy to motive power, with said fluid being cooled in  
8       process;  
9           a condenser for receiving said cooled fluid and for further cooling said fluid  
10      to cause it to change to a liquid state;  
11          a circulation means for receiving said liquid refrigerant and circulating it to  
12      said heat exchanger;  
13          wherein said heat exchanger is adapted to transfer heat from a plurality of  
14      sources within said engine.

1           2.       A system as set forth in claim 1 wherein said heat exchanger is  
2       adapted to conduct the flow of two different engine fluids therethrough.

1           3.       A system as set forth in claim 2 wherein said heat exchanger is so  
2       adapted as to have engine coolant passing therethrough.

1           4.       A system as set forth in claim 2 wherein said heat exchanger is so  
2       adapted as to have engine lubricant passing therethrough.

1           5.       A system as set forth in claim 2 wherein the flow of said two  
2       different engine fluids is in the same direction through said heat exchanger.

1           6.       A system as set forth in claim 5 wherein said ORC flow is in a  
2       direction opposite to said two different engine fluid flows.

1           7.       A system as set forth in claim 2 wherein the temperature of said two  
2 different engine fluids are in the range of 160 to 200°F.

1           8.       A system as set forth in claim 2 wherein said two different engine  
2 fluids comprise an engine coolant and an engine lubricant.

1           9.       A method of operating a waste heat recovery system having an  
2 organic rankine cycle with its motive fluid in heat exchange relationship with  
3 relatively hot fluids of an engine, comprising the steps of:  
4           circulating a relatively cool motive fluid from a condenser of said organic  
5 rankine cycle through at least one heat exchanger;  
6           circulating a plurality of relatively hot fluids from said engine through said  
7 at least one heat exchanger to thereby heat said motive fluid and cool said plurality  
8 of fluids;  
9           circulate said heated motive fluid through a turbine for providing motive  
10 power thereto while cooling said motive fluid;  
11           circulating said cooled motive fluid to said condenser; and  
12           circulating said plurality of cooled engine fluids back to said engine.

1           10.      A method as set forth in claim 9 wherein said step of circulating a  
2 plurality of relatively hot fluids includes the step of circulating engine coolant  
3 through said heat exchanger.

1           11.      A method as set forth in claim 9 wherein said step of circulating a  
2 plurality of relatively hot fluids includes the step of circulating engine lubricant  
3 through said heat exchanger.

1           12.      A method as set forth in claim 9 wherein said step of circulating a  
2 plurality of relatively hot fluids includes the step of circulating an engine coolant  
3 and an engine lubricant through said heat exchanger.

1           13.     A method as set forth in claim 12 wherein said engine coolant and  
2     engine lubricant are made to flow through the heat exchanger in the same direction.

1           14.     A method as set forth in claim 13 wherein said step of circulating  
2     said relatively cool motive fluid is accomplished by causing said motive fluid to  
3     flow in a direction opposite to the flow of said engine coolant and engine lubricant.